

High Current Thermal Fuse



The HCTF series is especially designed for high current applications with an operation temperature up to 160 °C. In case of excess heat in the range of the functioning temperature of $(235 \pm 15)^\circ\text{C}$ the thermo fuse opens automatically and disconnects the circuit. Typical applications are automotive power electronics that are connected to steady battery power (B+ or terminal number 30).

FEATURES

- Functioning temperature: $\vartheta_F = (235 \pm 15)^\circ\text{C}$
- Holding temperature: $\vartheta_H = 160^\circ\text{C}$
- Current: $\leq 55\text{ A}$
- Suitable for resistive welding systems
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT

APPLICATIONS

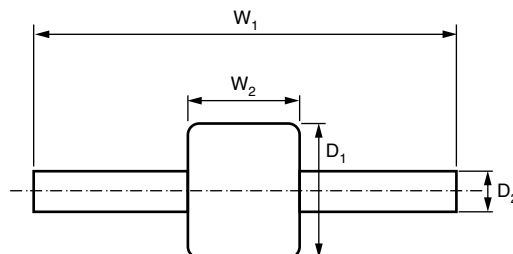
- Automotive
 - Fan control units
 - ABS
 - Diesel glow plug relays
 - Diesel pre-heaters
 - Electric coolant pumps

TECHNICAL SPECIFICATIONS	
DESCRIPTION	HCTF 235
Functioning temperature ϑ_F	$(235 \pm 15)^\circ\text{C}$
Holding temperature ϑ_H (1000 h)	160°C
Voltage U_{DC}	24 V
Current $I_{DC}^{(1)}$	$\leq 55\text{ A}$
Cold resistance R_{cold}	$\leq 0.1\text{ m}\Omega$
Residual resistance R_s after breaking	$> 1\text{ M}\Omega$

Note

⁽¹⁾ Current rating depends on external thermal management.

DIMENSIONS



DIMENSIONS - Mass and relevant physical dimensions					
TYPE	W_1 (mm)	W_2 (mm)	D_1 (mm)	D_2 (mm)	MASS (g)
HCTF	19.8 ± 0.5	6.5 ± 0.5	8.0 ± 0.5	1.8 ± 0.2	1.3 ± 0.3



PART NUMBER AND PRODUCT DESCRIPTION (1)																	
PART NUMBER: HCTF235L055000BR00																	
H	C	T	F	2	3	5	L	0	5	5	0	0	0	B	R	0	0
TYPE/ FUNCTIONING TEMPERATURE	TOLERANCE		SPECIAL		CURRENT		PACKAGING		SPECIAL								
HCTF235	L = ± 15 °C		0 = Standard		Current in mA. 55000 = 55 A		BR		Up to 2 digits 00 = Standard								
PRODUCT DESCRIPTION: HCTF 235 15 °C BR 55A0																	
HCTF	235	15 °C	BR	55A0													
TYPE	FUNCTIONING TEMPERATURE	TOLERANCE	PACKAGING	CURRENT													
HCTF	235	± 15 °C	BR	55A0 = 55 A													

Note

(1) Products can be ordered using either the PART NUMBER or the PRODUCT DESCRIPTION

PACKAGING						
TYPE	CODE	QUANTITY	CARRIER TAPE	WIDTH	PITCH	REEL DIAMETER
HCTF	BR	750	Blister tape acc. IEC 60286-3 type III	32 mm	12 mm	360 mm/14.2"

ASSEMBLY

The high current thermal fuse HCTF 235 is suitable for processing on e.g. automatic electric resistance welding or crimping assembly systems. Any deformation and overheating of the component body to levels above the holding temperature has to be avoided during the assembly.

The HCTF 235 CP complies with the JIG 101 list of legal restrictions on hazardous substances.

This includes full compliance with the following directives:

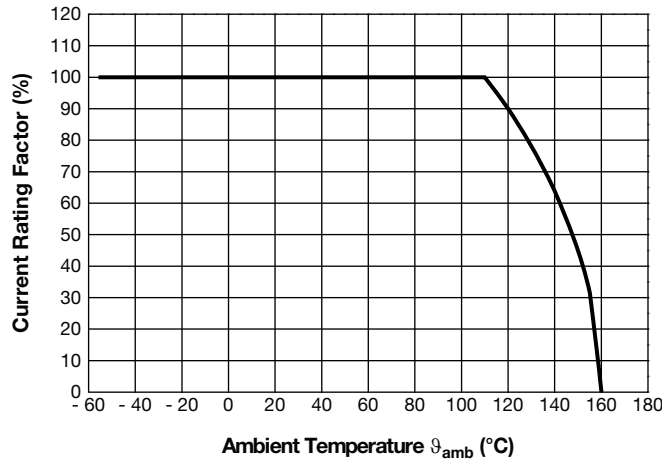
- 2000/53/EC End of Life Vehicle Directive (ELV) and Annex II (ELV II)
- 2011/65/EU Restriction of the use of Hazardous Substances Directive (RoHS)
- 2002/96/EC Waste Electrical and Electronic Equipment Directive (WEEE)

RELATED PRODUCTS

A version for automatic insert systems is available, too.

See datasheet: HCTF 235 CP Series (www.vishay.com/doc?28850)

FUNCTIONAL PERFORMANCE



Current Rating Factor vs. Ambient Temperature θ_{amb}

Note

- The current rating factor depends on the mounting and environmental conditions. The power dissipation on the thermal fuse generates a temperature rise against the local ambient, depending on the heat flow supported by additional conductive materials as electrical wires, lead frames or other electrical connections (thermal resistance). Please contact the factory (please refer to e-mail contact below) for support and further technical details.

TESTS AND REQUIREMENTS

All tests are carried out in accordance with the following test procedures and specifications:

- IEC 60115-1
- ICE 60068-1
- IEC 61340-3-1
- MIL-STD-202

Unless otherwise specified the following values apply:

- Temperature: 15 °C to 35 °C
- Relative humidity: 25 % to 75 %
- Air pressure: 86 kPa to 106 kPa (860 mbar to 1060 mbar).

The tests are carried out under standard atmospheric conditions in accordance with IEC 60068-1, 5.3.

TEST PROCEDURES AND REQUIREMENTS				
EN 60115-1 CLAUSE	IEC 60068-2 TEST METHOD	TEST	PROCEDURE	REQUIREMENTS
4.25.3	-	Endurance	Unpowered; 160 °C; 1000 h	$R \leq 0.2 \text{ m}\Omega$
-	-	Operational life acc. to MIL-STD-202 METHOD 108A	55 A; 1000 h; case temperature max. 160 °C	$R \leq 0.2 \text{ m}\Omega$
4.19	14 (Na)	Rapid change of temperature	10 min at - 55 °C and 10 min at 155 °C; transition time < 10 s; 1000 cycles	$R \leq 0.2 \text{ m}\Omega$
4.23.6	30 (Db)	Damp heat, cyclic	55 °C; 5 days > 90 % RH; 5 cycles	$R \leq 0.2 \text{ m}\Omega$
-	27 (Ea)	Mechanical shock	Half sine pulse shape; 6 ms; peak acceleration 100 g; 3 shocks in both directions of each axis	$R \leq 0.2 \text{ m}\Omega$



TEST PROCEDURES AND REQUIREMENTS				
EN 60115-1 CLAUSE	IEC 60068-2 TEST METHOD	TEST	PROCEDURE	REQUIREMENTS
4.22	6 (Fc)	Vibration	f ₁ : 10 Hz; f ₂ : 2000 Hz amplitude ± 1.5 mm or acceleration 50 m/s ² (5 g), whatever is less severe. 20 min/cycle (f ₁ -f ₂ -f ₁); 10 cycles each for 3 axes	$R \leq 0.2 \text{ m}\Omega$
4.40	-	ESD; Human body model acc. to IEC 61340-3-1	$U = 4 \text{ kV}$; $C = 100 \text{ pF}$; $R = 1.5 \text{ k}\Omega$; 3 pos. + 3 neg.	$R \leq 0.2 \text{ m}\Omega$
-	-	Time until opening	Unpowered; pre-heated at 200 °C oil bath at 275 °C ± 5 K	≤ 2.0 min
4.16	21 (Ua1)	Robustness of terminations	Tensile force (40 ± 4) N; 10 s	$R \leq 0.2 \text{ m}\Omega$
4.35	-	Flammability	Needle flame test; 10 s	No burning after 30 s



Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.